In the Drawings

The attached sheet of drawings replaces sheet two of the original sheets. Drawings changes have been made to Figure 2.

In Fig. 2, the alpha (α) symbol was added to alpha pulses 19, 20, and 21.

No new matter has been added.

Drawing Attachments:One Replacement Sheets of drawings

In the Specification

Please amend the Brief Description of the Drawings to read:

The drawings illustrate one preferred embodiment presently contemplated for carrying out the invention.

In the drawings:

Fig. 1 is a schematic block diagram of an MR imaging system for use with the present invention.

Fig. 2 is a graphical representation of a portion of a gradient echo pulse sequence in accordance with one embodiment of the present invention.

Figs. 3-5 are graphs illustrating longitudinal magnetization from fat for three exemplary alpha pulse train lengths.

Fig. ~~3~~ 6 is a flow chart setting forth the steps of on-the-fly optimization of tissue suppression in accordance with one embodiment of the present invention.

Please amend paragraph [0030] as follows:

It has been discovered that longer alpha pulse trains result in greater recovery of the magnetization from fat, but also result in shorter acquisition times. For example, the magnetization recovery from fat for twelve alpha pulses has been found, in one example, to be significantly less than the initial value of magnetization, as shown in Fig. 3. Further, a train pulse having sixteen alpha pulses also results in a longitudinal magnetization recovery significantly less than the initial value of magnetization, as shown in Fig. 4. However, the amount of recovery with sixteen alpha pulses has been shown to be greater than the amount of recovery for a twelve pulse alpha pulse train. It is clear that a twenty-four pulse alpha pulse train results in substantially more recovery than that achieved with either a twelve or sixteen pulse alpha pulse train, as shown in Fig. 5. As noted above, an increasing number of alpha pulses in the pulse train also shortens the acquisition times of the entire data set, as fewer inversion pulses are necessary . The demand for patient throughput, and constraints of undesirable patient motion however, mandate minimum data acquisition time. As such, the user or pulse sequence developer is allowed to select or establish an upper threshold for magnetization recovery for the suppressed tissue. As such, the maximum number of

pulses of the alpha pulse train that can be applied while suppressing the desired tissue below the user-selected threshold is used as the optimal number of pulses to apply.

Please amend paragraph [0031] as follows:

Referring now to Fig. ~~3~~6, the acts/steps of a control algorithm for determining the optimum number of alpha pulses to be applied after each inversion pulse of a gradient echo pulse sequence are set forth. The acts/steps are preferably carried out "on-the-fly" such that the gradient echo pulse sequence is designed specifically and uniquely for imaging parameters of an imminent MR study. As will be described, a computer is configured to receive a series of user inputs identifying parameters of scan and from those specific inputs, develop an imaging sequence. The technique 80 begins at 82 with a user or pulse sequence developer inputting a series of imaging parameters for an imminent scan at 84. The user inputs may include receiver bandwidth (kHz), x-resolution, number of slices, y-resolution, TR , and the flip angle for each alpha pulse. From these user inputs, the algorithm determines a series of values that are used to calculate the optimum number of alpha pulses to be played out after each spectrally selective inversion pulse. For example, at step 86, the algorithm solves the following equation:

$$E = \exp(-T_R/T_1) \qquad \text{(Eqn. 1).}$$